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# IMPROVEMENTS AT COWEETA

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ENTERING  
COWEETA HYDROLOGIC  
LABORATORY





*Southeastern Forest  
Experiment Station*

*Forest Service  
U.S. Department of Agriculture*

**1964**

# Improvements at Coweeta

A research unit of the United States Forest Service, the Coweeta Hydrologic Laboratory, near Franklin, North Carolina, was established in 1933 to study the effect of man's use of forest land on streamflow. The original buildings, roads, and stream weirs were built under the Civilian Conservation Corps program. During the next 30 years, many forest scientists contributed greatly to knowledge of forests and water. Coweeta became world-famous while several classic watershed experiments were being carried out. No new buildings had been added since the days of the big CCC camp down on the flat near the entrance road, but last year's Accelerated Public Works program provided a long-anticipated opportunity to upgrade research facilities.

The Accelerated Public Works (APW) program began at Coweeta during the last week of October 1962. Altogether 94 men were hired for varying periods, adding up to 310 man-months. In addition to these wages to local people, about \$80,000 went for machine rentals, supplies, and materials — all helping the local economy. The work fell under two general types encompassing about 15 projects.

First, our plans for replacing or reconstructing the old administrative area buildings, left over from CCC days, were put into action. Much of the old construction was in sad repair, some of it literally falling down because of termites, rot, and old age. Storage was severely limited, and office space extremely cramped. The area water system stored only about 1,500 gallons, and



pressure was entirely inadequate for fire protection. Plans called for a reduction in the number of separate buildings and sheds from 13 to 7, and the construction or reconstruction of all but 2 of the remainder. All this was accomplished under the program. Storage space was doubled and consolidated into one 40x60-foot metal building. The old shop building was retained but cleared to double the meager laboratory and instrument room facilities which had always occupied a corner of this building.

In addition, a new hydrology-meteorology workshop (The "Wet Lab"), measuring 40x100 feet, was constructed and equipped with an 18-inch pipeline to deliver large quantities of gravity water for hydraulic studies relating to small watersheds. This building, along with other construction, was planned as an auxiliary facility to a main Coweeta office-laboratory now on the drawing board. In the meantime, the Wet Lab answers a great need for expanded working space in studies involving large tilting models, flowing water, or sprinkling systems, and movable soil tanks for instrument calibrations. A new 3-bedroom forest superintendent's dwelling was constructed to release the best one of the older dwellings for use as a bunkhouse and conference room, while two other dwellings and a separate conference room were torn down. The whole administrative area water supply system was replaced with a 20,000-gallon gravity supply system, enough to meet all estimated future needs. Finally, the present office building was reconstructed to double the space available for the staff to carry out analyses, computations, and



study processing on the many experiments under way, as well as to facilitate the business aspects of the laboratory.

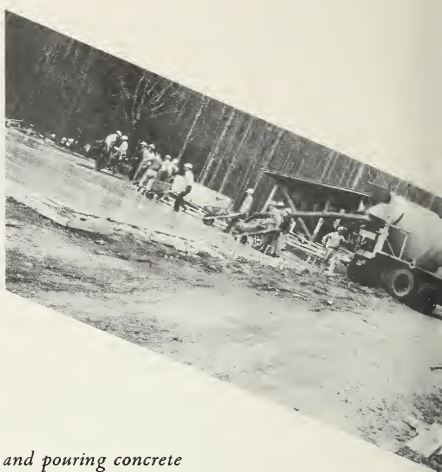
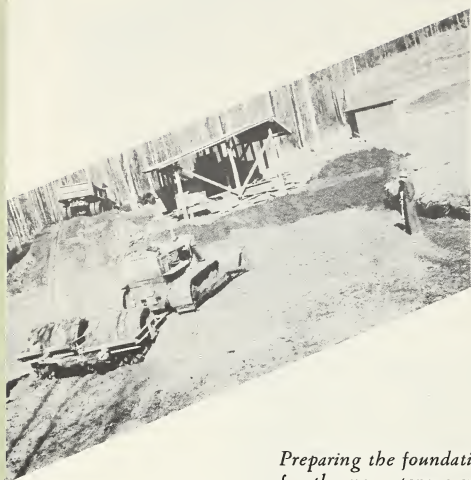
While this construction was going on, a second series of projects employing from 30 to 70 workers was organized into wood-cutting, road building, and maintenance crews. Assisted by bulldozers and dynamite teams, about 20 men reconstructed 25 miles of neglected roads and trails needed for ready access to experimental areas. Some new roads were designed and built, dozens of timber bridges were replaced, and many permanent gates and culverts were installed. Grades and drainage systems were improved, and all raw banks and fills stabilized under grass, while the old roadbeds were obliterated. The net result was not only a reduction in total road mileage but an improvement in all-weather access. To cut down maintenance was the guiding criterion in repairing the transportation system on the 5,600-acre experimental forest.

A small crew of five men worked several months repairing 18 weirs still in use at Coweeta, a job we were struggling with slowly before implementation of the emergency program. Many cleanup and landscaping jobs were done.

Perhaps the most outstanding of all the projects accomplished under APW was treatment of three experimental watersheds, totaling about 500

*A new 3-bedroom forest superintendent's dwelling was constructed at Coweeta to release the older dwelling for use as a bunkhouse and conference room.*





*Preparing the foundation and pouring concrete for the new storage warehouse.*



*The completed storage warehouse is 40 x 60. It doubles storage space and takes the place of a number of separate buildings and sheds. The old shop building has been retained for laboratory and instrument room facilities.*

acres of forest land. Earlier clear-cutting experiments on Coweeta watersheds have left doubt in the minds of some hydrologists about the adequacy of the pretreatment calibration period. To take advantage of much longer calibration periods and firmly establish the reality of forest cutting effects on water yield, the two largest clear-cutting experiments ever carried out anywhere were performed by crews under this program. Operating under extremely hazardous conditions in very steep mountains, and using a battery of 15 power saws, our crew in 1,340 man-days completed the felling of all trees and shrubs on 145 acres of forest land.

The largest single project undertaken during the program was conversion of a 360-acre wild land watershed to a demonstration pilot study of intensive multiple use as it might be applied to municipal watersheds in the southern Appalachians 25 to 50 years hence. On this unit, stagnant hardwood stands were removed to increase water yield and reproduce better timber and game forage. A carefully designed access system was constructed to demonstrate the many advantages of forest management on good roads and trails. Roughly one-third of the funds made available under APW went into this unique experiment in land management. The value of the timber now being sold on the unit promises to return almost immediately an equal amount to the treasury and local economy in stumpage values and timber operator employment. Thus the work stimulated in a direct way a chain reaction tending to improve local economy, which was one of the important objectives of the Accelerated Public Works Program as set up by Congress.

The benefits to the research program at Coweeta are threefold. First, some languishing plans for using several standby gaged watersheds to make final tests on forest cutting and water yield were implemented. Second, the building space and research facilities were approximately doubled, allowing a broader and more imaginative attack on the research program. And third, the operating, building, and transportation facilities of the laboratory were repaired and rebuilt throughout, allowing diversion of funds from maintenance to research projects.





*New bridge across Shope Fork to the Wet Lab.*



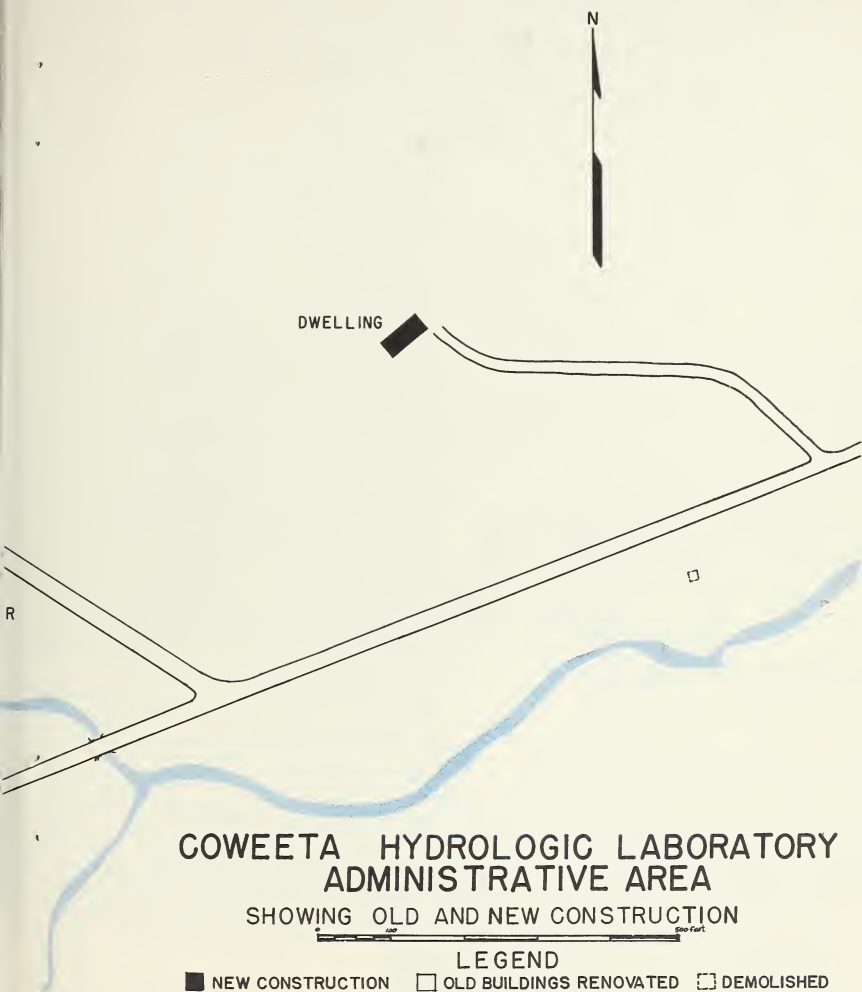
*The Wet Lab is an insulated, heated, all-metal building with concrete floor. Here, the building contractor is installing skylights and electrical fixtures.*



*An 18-inch pipeline delivers gravity water to the Wet Lab hydrology workshop. This 40x100-ft. building is used for studies involving large tilting models, flowing water, sprinkling systems, and movable soil tanks.*













*Crew laying culvert on contour road into multiple use study area. This is part of 180 acres clear cut to observe and measure expected increase in water yields. Sprout reproduction will provide wildlife forage and, in time, an improved stand of timber. Assisted by bulldozers and dynamite teams, about 20 men reconstructed 25 miles of roads and trails needed for access to experimental areas. They replaced dozens of timber bridges, installed culverts, improved grades and stabilized raw banks under grass.*



*Before and after.*









*One of two watersheds at Coweeta clear cut as an APW project will serve as an outdoor proving ground to make earlier findings more widely applicable on municipal watersheds and other large holdings. Seen here in an aerial view, the very steep 107-acre watershed was cleared by APW crews at the rate of 9 man-days per acre. Inset shows clearing crew and supervisors just before cutting the last tree.*



*Weather Station 1, in place since 1934, was shifted in the facelifting program from just below the cabin in the background.*



*A new wing was added to the old administration building. For the first time the research staff has individual office space.*



*APW crew erecting forms for 20,000-gallon fresh water reservoir. A plastic pipe brings gravity water from a spring  $\frac{3}{4}$  mile away. The new gravity supply system will meet all estimated future needs.*



*Debris removal coupled with habitat improvement for trout improves conditions on the multiple use demonstration area. The upstream pool soon fills behind the log dam but a deeper pool develops beneath the overfall.*





OLD

DAYS

